

OSE II – SAFE AND RELIABLE BIOREMEDIATION FOR OIL SPILLS

SCIENTIFIC TESTING, THIRD PARTY ENDORSEMENTS

Since 1989, OSEI Corporation has effectively cleaned up more than 18,000 spills as a first response method* for cleaning up oil spills. The product, **Oil Spill Eater II**™ (OSEII) has been independently and rigorously tested in scientific settings the world over. It is distributed in over 35 Nations and is listed on the US EPA's National Contingency Plan for Oil Spills (NCP); OSE II is listed in the U.S. Defense Logistics supply chain and the Navy DENIX system as BAA Book 18 number 14.

Shoring up Mother Nature's own remedies, **Oil Spill Eater II** is the world's most environmentally safe and cost effective bioremediation process for the mitigation of hazardous waste, spills and contamination--virtually anywhere and of any size. It is environmentally safe because it uses nature's own bioremediation processes to effectively eradicate hazardous materials. (See What **OSE II is NOT**).

*A First Response designated product means it can be used on fresh oil as an immediate clean up response method as opposed to being designed for use on weathered oil or chemicals. OSE II can also be used on weathered spills.

THE PROCESS

When OSE II is applied to a spill:

- the **biosurfactants** attack the molecular structure of the Hydrocarbon, by breaking the spill into small particles, then the oil is solubilized which increases the oil/water interface--all in approximately 30 minutes.
- during this process the OSE II **enzymes** form protein binding sites act as catalysts to induce the enhanced bacteria to utilize the broken down hydrocarbon as a food source.
- once these reactions have taken place, several conditions become evident:

- a. the oil is broken up, adhesion properties are diminished (which causes oil to release from marsh grass, vessels, BIRDS, marine species, beaches and more)
 - b. the fire hazard is reduced (which protects responders & ports)
 - c. the oil is caused to float (which prevents secondary contaminated areas and water column oxygen depletion) and most importantly
 - d. the oil is detoxified so it can be used as a food source at which point the oil is digested to an end point of CO₂ and water;
 - e. And finally, the enhanced bacteria die off to pre spill background levels.
- While these reactions are occurring OSE II's nutrient system is rapidly colonizing indigenous bacteria (OSE II does not introduce non indigenous bacteria into any eco system).
- Once the indigenous bacteria run out of the OSE II nutrients the bacteria then utilize the only food source left, the detoxified oil.
- There are also [constituents](#) in OSE II that once mixed and activated by natural water cause OSE II constituents to molecularly adhere to hydrocarbons. Hence, no matter where the current or tidal action pushes the oil, OSE II will stay with it.

EFFICACY TESTS, SCIENTIFIC STUDIES

OSE II can be used on the surface, below the surface, on the ocean floor, in marshes, estuaries, sand or soil beaches on rocks, in bays, ports and harbors. Ample case studies are available to prove it's workability in all mediums. OSE II is virtually non-toxic and extremely effective in breaking down oil. We suggest you go to OSEI Corporation's [Technical Library](#) to view the following:
(to view documentation and actual test reports, click the blue links below)

Salt Water Efficacy Tests:

- U.S. EPA / NETAC 21 Day & 28 Day Bioremediation Test - Biodegraded Alaskan Crude 98% in 21/28 days. (pg 25-35)
- U.S. Respiriosty Test – EPA determined OSE II to reduce hydrocarbons by 98% and aromatics by 85% which was better than any other product tested. (pg 41-44)

- University of Alaska (Dr. Brown) PAH Test – Demonstrates that OSE II with mineral nutrients and hydrocarbons is **300%** more effective than without OSE II. (pg 45-49)
- Mega Borg Ship Spill in Gulf (South African Crude Oil) Test – In 216 hours OSE II lowered TPH from 100,070 ppm to 516 ppm for a 99.5% reduction. (pg 50-52)
- BETX Bioremediation Test- OSE II can even work well on Benzene, Ethyl Benzene, Toulene and Xylene ratios demonstrate the potential to biodegrade as much as 98%. (pg 53-56)

Fresh Water Efficacy Tests:

- Chevron Crude Oil Bioremediation Test- OSEII on Chevron Crude in 24 days reduced 95,200 ppm to 690 ppm or 99.8% effective on biodegrading this oil.

Soil Efficacy Tests:

- U.S. Marine Corps Base 29 Palms California (Cleanup Won Environmental Award) (pg 1-5)

Salt Water Species Marine Toxicity Tests

- U.S. EPA / NETAC Mysid Toxicity Test (this test was run twice) – LC50 Test, at 96 hours OSE II greater than 2100 mg/L.
- Both Mummichog and Artemia Salina Toxicity Test – LC50 Test, at 48 hours OSE II is 5285 mg/L. (pg 14-23)

Fresh Water Species Marine Toxicity Tests:

- Rainbow Trout Toxicity Test by Environment Canada-Toxicity tests state 1000 mg/L or less is toxic. Anything higher is acceptable and considered non-toxic. OSE II, test result 10,000 mg/L = non-toxic.

Beneficial Environment Effects:

- Biological Oxygen Demand for OSE II –OSE II has minimal impact on BOD, less than 7%.
- Dispersant Swirling Flask Test - Proves OSE II causes oil to float

PRODUCT DEMONSTRATIONS, STATE OFFICIALS

For a product overview from TV News and demonstrations see:

- [WLOX News](#) OSEI Corp and Oil Spill Eater II are demonstrated for all the Senators and members of Mississippi DEQ. The product shows how quickly Oil Spill Eater II. Can work to begin breaking down an Oil Spill.
 - After seeing this demonstration, [Senator Tommy Gollott](#) of Mississippi sent a [formal request](#) to the Coast Guard and EPA response team members requesting the use of OSE II.
- [Department of Environmental Quality ALABAMA Demonstration](#):
 - DEQ Rep Contacted the Navy to verify they use OSE II
 - “This meets the criteria that the State of Alabama is looking for because it’s not adding a ‘superbug’ it is a simple process, there is no magic” Alabama DEQ Rep.
 - After demo, Senator Hank Erwin sent [formal request](#) to use OSE II to EPA.
- [Demonstration Video](#) on DWH Oil on private property.

OTHER ENDORSEMENTS

- Mr. Nick Nichols of the EPA oil program, and Debra Dietrich of the EPA Headquarters and Mr. Robinson EPA, Region 9 all have first-hand knowledge of OSE II being used in San Diego Bay by the U.S. Navy for over 100 spills, over a 3 ½ year period with no adverse effects to the whales, dolphins and other ocean ecology. OSEI Corp and OSE II are trusted and used by all 5 bodies of the U.S. Military.
- The EPA/Regional Response Team 6 had a success with OSE II on the [Osage Indian Reservation](#).
- BP has used OSE II in [Trinidad and Tobago](#) and a refinery in Greece.

- OSE II has been extensively reviewed by the Navy Environmental Health Center in Norfolk, Virginia. Mr. Jerry Drewer was our Contact: (757) 363-5540. OSE II has also been extensively tested by the Naval Research Lab in Key West, Florida: Our contact was Mr. Jan Berge (305) 293-4216.